

CASE REPORTS

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Massive pre-prostatic nodal metastasis from localized aggressive prostate cancer removed during robotic-assisted radical prostatectomy with extended pelvic lymph node dissection: a case report with brief literature review

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Abstract

Background During robotic-assisted radical prostatectomy (RARP) for prostate cancer (PCa), few attention is given to pre-prostatic fat tissue (PPT) even during pelvic lymph node dissection (PLND). However, the rare potential involvement of PPT lymph nodes (LN) by PCa metastasis has already been reported by several authors and may influence therapeutic strategy in intermediate and high-risk patients. We present the case of a 69-year-old man who underwent RARP with extended PLND (ePLND) for aggressive PCa with massive pre-prostatic nodal metastasis, sampled during prostate biopsies. We sought to report this case for the particular preoperative images and reinforce benefits of resecting PPT during PLND for PCa.

Case presentation A 69-year-old man consulted our department for high serum prostate specific antigen level (57 ng/mL). He had familial history of PCa only at first degree. On digital rectal evaluation, induration of left prostatic lobe was felt. Transrectal ultrasonography showed hypoechoic lesion in left prostatic lobe with supra-centimetric nodule in PPT. Pelvic magnetic resonance revealed two lesions in the peripheral zone with a 19-mm nodule on right paramedian side of PPT (see Fig. 1). Transrectal ultrasound-guided prostate biopsies were performed, including the nodule. On left side, 2 biopsies out of 6 showed Gleason 10 prostate cancer. On right side, all biopsies showed Gleason 9 prostate cancer. The PPT nodule showed Gleason 9 prostate cancer. Prostate specific membrane antigen (PSMA) positron emission tomography computed tomography scan showed hypermetabolic expression from left prostate lesions and PPT nodule. Transperitoneal RARP with ePLND was performed including PPT. Histopathological study revealed advanced prostate cancer with lymphovascular invasion and ECE (see Fig. 2). Evaluation of ePLND material showed metastasis in on pelvic LN and 23 mm nodal metastasis in PPT (see Fig. 2). Therefore, adjuvant therapy was initiated.

Conclusions PPT resection is not part of routine RARP with ePLND for PCa. However, this tissue might contain LN harbouring metastasis independently from pelvic LN, indicating adjuvant therapy in case of upstaging. Considering

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the low morbidity of resecting PPT and its facility, it should always been resected and sent for analysis in intermediate and high-risk PCa.

Keywords Prostate cancer, Pre-prostatic tissue, Anterior fatpad, Robotic surgery, Case report

1 Background

When performing robotic-assisted radical prostatectomy (RARP) for prostate cancer (PCa), the first steps usually involve separating the anterior wall of the prostate from the pre-prostatic tissue (PPT). This allows to identify anatomical landmarks and safely start dissection. Generally, few attention is given to this tissue even if pelvic lymph node dissection (PLND) is associated. However, the rare involvement of PPT lymph nodes (LN) by PCa metastasis has already been reported by several authors in the literature and may influence the therapeutic strategy in intermediate and high-risk PCa patients [1–7]. We present the case of a 69-year-old man who underwent RARP with extended PLND (ePLND) for an aggressive localized PCa. The preoperative evaluation revealed a PPT nodule that was sampled during transrectal ultrasound-guided prostate biopsies and showed the same aggressive PCa histologic pattern as the prostate biopsy samples. Definitive histopathological analysis of operative specimen revealed a locally advanced aggressive PCa with extracapsular extension (ECE) and 8-mm size LN metastasis in a left pelvic LN and 23-mm size LN metastasis in a PPT LN. To our knowledge, few cases of PCa LN metastasis to PPT of this size have been reported in

the current literature. We reviewed current literature and sought to report this case to share the particular images observed on preoperative imaging and to reinforce benefits of resecting PPT systematically for evaluation when performing PLND for PCa.

2 Case presentation

A 69-year-old man consulted our urology department for a raised serum prostate-specific antigen (PSA) level reaching 57 ng/mL. He reported familial history of PCa at the first degree. On physical examination, induration of left prostatic lobe was felt on digital rectal evaluation without palpable adenopathy. Transrectal ultrasonography showed hypoechoic lesion in left prostatic lobe and an unusual supra-centimetric nodule localized in PPT. Pelvic magnetic resonance demonstrated two lesions in the prostate peripheral zone at the level of postero-basal and postero-apical segments (see Fig. 1). Additionally, a well-delimited nodule of 19 mm was seen on right paramedian side of PPT, suggesting a LN metastasis (see Fig. 1). Transrectal ultrasound-guided prostate biopsies were performed. On the left side, 2 biopsies out of 6 showed a Gleason 10 prostatic adenocarcinoma. On the right side, all biopsies

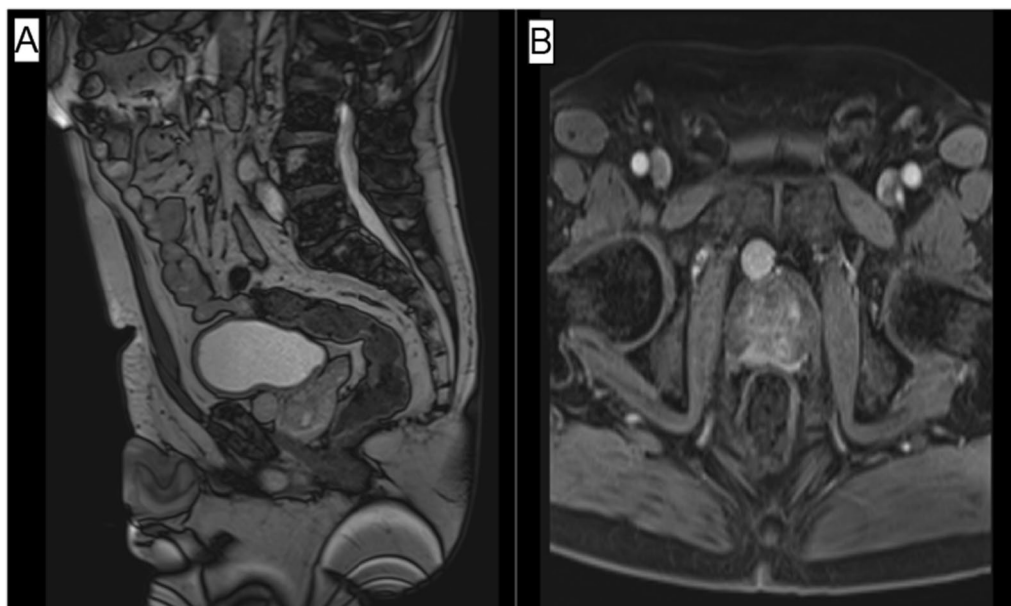


Fig. 1 Pelvic magnetic resonance imagery. **A** Round pre-prostatic nodule of 19×17 mm in anterior and right-paramedian position (T2 sequence, sagittal plane). **B** After Gadolinium administration, the nodule showed mild contrast-enhancement (T1 sequence, axial plane)

implication of this tissue in lymphatic spread of PCa has already been reported by several multicentric and large single-centre series [1–8]. LN are present in this tissue in up to 10.6% of time and harbour PCa metastasis in up to 1.3% of intermediate- and high-risk patients [1–8]. In their series of 197 patients, Kim et al. separated the anterior fatpad in three parts (left, middle, right) and found that patients had often LN in the middle one (89%), as is our case [6]. According to some authors, PPT LN metastasis can be found in patients without synchronous pelvic LN metastasis and this area might thus represent an independent landing zone of PCa metastasis, potentially inducing tumor upstaging after pathological analysis [8]. However, due to the rarity of LN metastasis in the PPT, indicators on which patients may benefit the most from PPT analysis remains unclear. Further, some surgeons might be reluctant to perform this procedure albeit it is not expensive, considering it may increase the operative time. Several authors tried to find clinical characteristics in patients with PCa metastasis in PPT LN [3–7]. Kwon et al. retrospectively analyzed 8800 patients from eleven international centers across three countries [4]. Eighty-eight patients had metastatic disease to PPT LN with sixty-three (71.6%) patients upstaged after pathological analysis. They also found that patients with LN metastasis in PPT, independently from pelvic LN status, had more aggressive PCa (higher incidence of biopsy Gleason score 8–10, pathologic N1 disease, ECE, or positive surgical margin). This is line with other reports and was also observed in our case [1–3, 5–7]. After reviewing current literature, several questions remain over the benefits of this procedure and the patients in which it should be performed considering the rarity of PCa nodal metastasis in PPT. In most studies, all patients underwent PPT removal or had synchronous pelvic LN metastasis indicating adjuvant therapy [1–8]. Jeong et al. reported no recurrence in 2-year follow-up of 3 patients out of 258 patients with only PPT LN metastasis but no pelvic LN metastasis [11]. Besides, Kim et al. reported that adjuvant radiotherapy and short-term anti-androgen therapy might be beneficial for PCa patients with LN metastasis in PPT [6]. However, publications on long-term follow-up of PCa patients with metastasis in PPT LN are lacking. Additional prospective studies comparing patients with or without PPT removal with longer follow-up are needed to establish the real benefits of this removal and its contribution to the prognostic and treatment of intermediate and high-risk PCa patients.

4 Conclusions

PPT resection is often not part of the routine procedure when performing RARP with ePLND for PCa.

However, this tissue might contain LN that can harbour PCa metastasis, independently from pelvic LN status. This can influence postoperative tumoral staging and indication for adjuvant therapy in some patients. Considering the very low morbidity of this procedure, its technical facility, and the absence of substantial additional costs, PPT should always been resected and sent apart from the ePLND material for histopathological analysis in intermediate and high-risk PCa.

Abbreviations

ECE	Extracapsular extension
ePLND	Extended pelvic lymph nodes dissection
LN	Lymph node
PCa	Prostate cancer
PET-CT	Positron emission tomography-computed tomography scan
PLND	Pelvic lymph nodes dissection
PPT	Preprostatic tissue
PSA	Prostate specific antigen
PSMA	Prostate specific membrane antigen
RARP	Robotic-assisted radical prostatectomy

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Consent for publication

Informed consent was obtained from the patient for publication of this case report and accompanying images.

Competing interests

The author have no competing interests to declare.

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